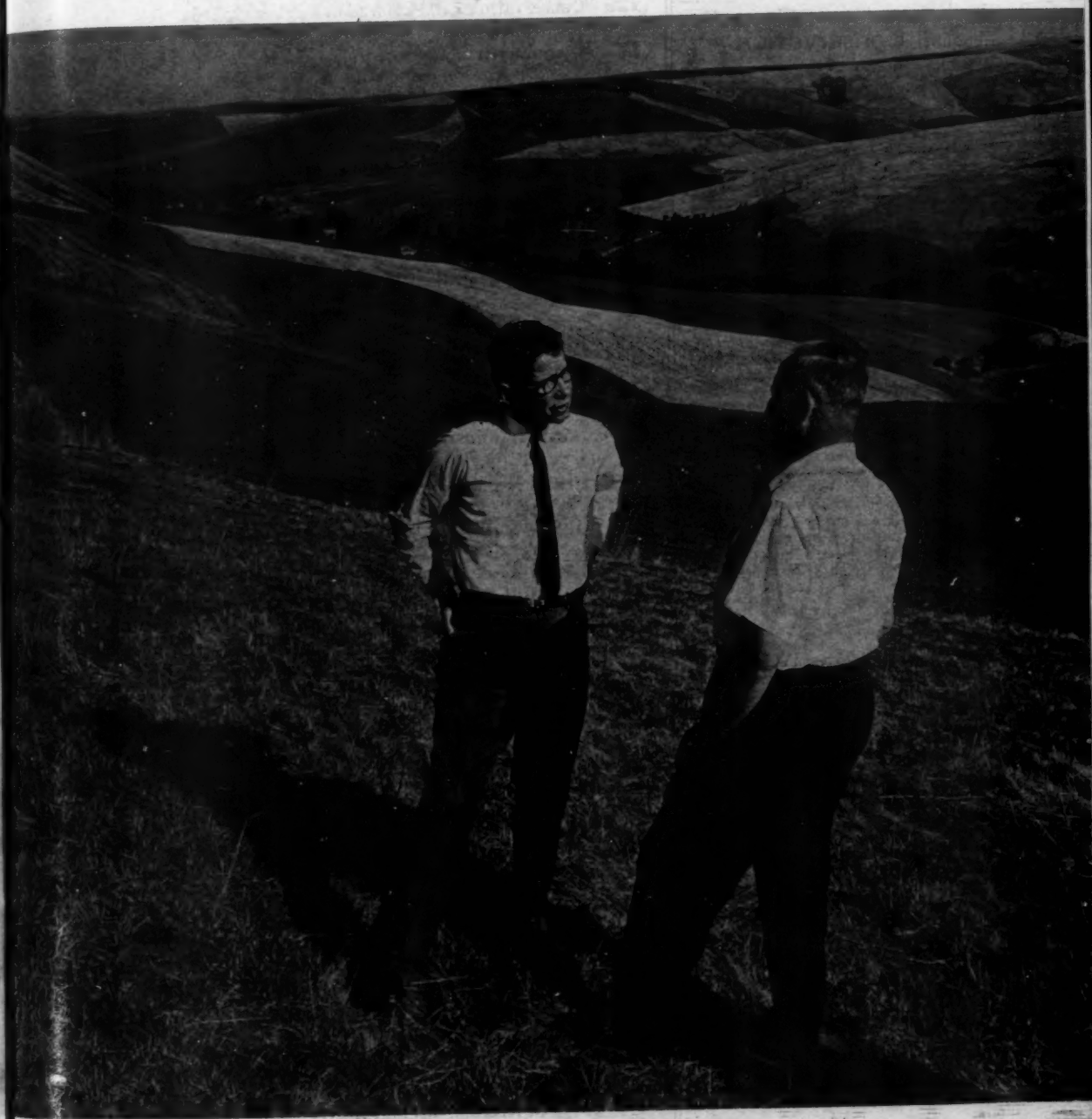
US. 8 S58 S
PUBLIC LIBRARY
JAN 28 1964
DETROIT

JANUARY 1964

Soil Conservation



SOIL CONSERVATION SERVICE • U. S. DEPARTMENT OF AGRICULTURE

OUR SOIL ★ OUR STRENGTH

Soil Conservation

25 Years Ago

"Added responsibilities recently assigned by the Department of Agriculture broaden to some extent the horizon of the Soil Conservation Service. New activities consist of drainage, water facilities, irrigation, submarginal land acquisition and development, and upstream flood control. . . .They provide additional methods of treatment to achieve proper land use.

"As the Service will be benefited by these activities, so also will the activities themselves be benefited by increased scope and by integration with other activities to secure a fully coordinated conservation program. For instance, an action program for flood control may embrace application on a watershed basis of most of the conservation features already developed. Soil improvement practices will be required to decrease runoff; flood retardation by vegetation and structures will be necessary; the reestablishment of vegetal cover over critically eroding areas will be essential as a method of silt control; channel improvement and protection, highway erosion control, and gully control over the watershed, all will enter in the picture."

COVER PICTURE—Secretary Orville L. Freeman and Assistant Secretary John A. Baker discussing stripcropping applied, with Agricultural Conservation Program cost-sharing, on steep slope on Melvin Simons' 844-acre small grain and livestock farm in Walla Walla Soil Conservation District, near Walla Walla, Wash. Simons has been a district cooperator since 1945.—Photo by Roy Clark.

VOL. XXIX, NO. 6 JANUARY 1964

CONTENTS

Page

123 Conservation Planning Shaped to Broadened Needs
By Val W. Silkett

126 Conservation Fills Coloradan's Income Needs
By Lynn R. Healey

127 Planning Brings Community Cash—Better Living
By Gordon Gibson and C. R. Patton

128 Colonial Town Uses Soil Survey in Planning
By Bernhard A. Roth

131 "Hi Neighbor!" Company's Key to Recreation—Jobs
By Chester Bellard

132 Excerpts from "A Place to Live," *The Yearbook of Agriculture*
By Orville L. Freeman and John A. Baker

134 Community Watershed Dam Helps Cut Fire Insurance
By R. M. Dailey

135 First Conservation District Farm Plan Marker

136 Cropland Conversion Boon to Hunters and Fisherman
By Hugh Tidwell

137 Klubert Warenbourg—*A Profile*
By Ralph Shipp

138 Orchardist Brothers Combine Conservation—Marketing
By Garland J. Kidd

139 North Carolina Tobacco Growers Like Tall Fescue
By W. W. Stevens

140 District Cooperator's Movie Shows How to Build Pond
By R. R. Kirby and J. W. Gilliam

141 Right Equipment Helps District Do Efficient Job
By Ben Mace

142 Irrigation Farmers Restore Alkali Lands
By Norris A. Mathey

143 Book Reviews

Soil Conservation

ORVILLE L. FREEMAN
Secretary of Agriculture

JOHN A. BAKER
Assistant Secretary for Rural Development and Conservation

DONALD A. WILLIAMS
Administrator, Soil Conservation Service

SOIL CONSERVATION is the official organ of the Soil Conservation Service, published by direction of the Secretary of Agriculture as administrative information required for proper transaction of the public business. The printing of this publication was approved by the Bureau of the Budget, July 25, 1963.

FRANK B. HARPER, Editor

15 CENTS PER COPY $1.50 PER YEAR

FOREIGN—$2.25 PER YEAR

25 percent discount on orders of 100 or more mailed to one address.

All orders for paid subscriptions go to the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

Today's Conservation Planning Is Shaped to Broadened Needs

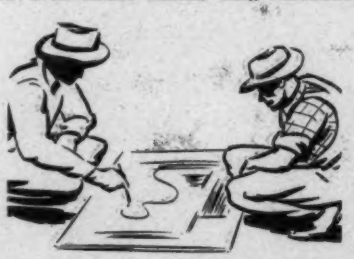
By Val W. Silkett

RAPIDLY growing needs for land space and for water have given new and vastly broader proportions to conservation planning for the use of these related resources.

Multiple use—multiple use of land, water, forests, and grasslands for agriculture, industry, recreation, and more satisfying community living—is a compelling factor in today's adjustments of growing urban and shrinking rural populations. Planning authorities at all geographical levels accordingly are directly concerned, from metropolitan area planning bodies to farmers' soil and water conservation districts. So are all local, State, and Federal sources of technical, financing, or other facilities that may be used by those who own or control these land and other resources for their own and the public's greater benefit.

With agricultural lands being converted at the rate of more than 1 million acres a year to nonagricultural uses to meet the demands of our ever-growing population, countless areas over the country present complex problems to those charged with responsibilities in the development and conservation of individual and community physical and human resources. Soil and water conservation districts, covering 93 percent of the country's farm and range lands and 97 percent of its farms, are in the forefront among them. So are agencies like the Soil Conservation Service, which provides technical and other help to the districts, to small-watershed protection and flood prevention project organizations, and to others carrying out rural areas and rurban developments and other land-use and water-management undertakings.

When the national soil and water conservation movement was getting under way some 30 years ago, the recognized land and water problems were confined almost entirely to individual farms and ranches.



Soil erosion control practices, through agreements between the landowners or operators and the Government, were applied on scattered farms in cooperatively selected demonstration projects set up in major agricultural areas of the country. These relatively simple measures, based on studies begun a few years before at several special erosion control experiment stations, consisted largely of gully filling or sloping, check dam building, contour plowing and planting, and a few other simple practices.

When it soon became apparent that full effectiveness of nearly all erosion- and water-control practices depend upon using them with other conservation measures needed to meet varying soils, climatic, and other conditions, the conservation plan came into being as a guide to treatment of lands with all kinds of soil and different uses. The land-capability interpretation of soil surveys—which is becoming increasingly important in all kinds of land-use and water-management planning today—also was evolved. It groups all soil mapping units into eight broad classes on the basis of soils, erosion, climatic or other hazards to agricultural production or other use.

The way also was paved early for the extensive planning techniques that were to become so essential in today's multipurpose conservation undertakings. It was found, for example, that to handle some common local water management and other problems adequately called for two or more farmers' working together with an overall plan. In soil conservation districts, which farmers and ranchers began organizing under State enabling acts in 1937, conservation farm planning tended to be grouped in small community areas or local watersheds according to priority of their problems.

But even with extensive conservation planning in cooperation with individuals and groups of individuals, it became clear that a farm-by-farm approach to the country's soil and water problems was not the whole answer, any more than had been the initial practice-by-practice approach. It was the 1954 Watershed Protection and Flood Prevention Act (Public Law 566), authorizing local-State-Federal cooperation in community-type projects on small, or creek-size, watersheds, that opened up today's new era of conservation

The author is director, Farm and Ranch Planning Division, Soil Conservation Service, Washington, D. C.

MULTIPLE-USE PLANNING.—Hoisery company built new factory adjacent to lake behind flood-prevention dam in Six-Mile Creek watershed project in Logan County, Ark.

PLANNING FOR WILDLIFE-RECREATION.—Fourth-season sericea lespedeza planting, 2,000 feet long and 15 to 20 feet wide, for wildlife food and cover in Dinwiddie County, Va.

URBANIZATION PLANNING.—New subdivision on good Cook County, Ill., farmland (farm buildings in background) brings its own conservation land-use problems.

planning. That is, by protecting sizable areas within a watershed with conservation land treatment measures, by dealing with relatively large numbers of rural or urban people economically or otherwise concerned with the watershed protection or flood prevention objectives, and by planning with them for multiple use of the watershed's interrelated soil, water, and plant resources.

Perhaps most important was the awareness that came of the impact which full resource development and use could have upon the people in a rural community and upon its economy. Here, conservation plans for individual land units fit smoothly together into the overall watershed plan to achieve common objectives of watershed protection, flood prevention, wildlife and recreational development, or agricultural, municipal, or industrial water supply for rural area development.

Now, also, especially in the New England and other States with major population concentrations in metropolitan areas, help goes to part-time farmers or to rural-urban residents. This "consultive assistance" usually is provided where special interpretations of soil surveys and conservation engineering skills are needed. Many planning bodies and local or State governments request and help pay for soil surveys used in such local planning. Such consultive planning help can be as effective as direct farm conservation or watershed planning, if it is timed so as to prevent conservation problems from occurring. For example, it is difficult for a soil scientist to be helpful with soil interpretations of permeability where houses already have been built and it is found that the septic tanks won't work!

The Rural Areas Development concept of bringing land, water, and people into a single development effort for community improvement has further served as a base for the Department of Agri-

culture to move ahead into two major new areas of conservation planning: One is income-producing recreation on rural non-Federal lands. The other is broad rural area and rural community planning for natural resources conservation and development.

The Food and Agriculture Act of 1962 provided authority for the Department to assist individuals or groups to develop income-producing recreational enterprises on their lands. This effort, under SCS leadership, envisions the full use of technical, cost-sharing, and credit facilities available from any agency of the Department. Amendments to the Watershed Protection and Flood Prevention Act at the same time authorized cost-sharing for recreation developments.

Basic to the adjustment in planning techniques to meet the needs for both income-producing recreation enterprises and recreation developments in watersheds is the recognition by technical specialists and the public alike that use of land for recreation is an agricultural land use, in the same sense as using it for pasture or woodland. Another essential concept is that of multiple use of land, water, and vegetative resources.

Perhaps the greatest challenge to conservation planning today is the new Department program of help to local groups in developing resource conservation and development projects. Such projects, of varying size and complexity of natural resource problems, are locally initiated and sponsored. They are intended to bring about the orderly development, improvement, conservation, and use of the natural resources of the project area. The ultimate goal is to provide people employment and other economic opportunities.

Slide of unstable soil caused crackup of house at Delmar, N. Y.

These projects will require an overall plan for dealing with resource problems and relating their treatment to the economy of the project areas. Also involved are detailed plans for action, ranging from conservation plans for individual farms or ranches to multipurpose watershed plans. Current conservation programs will be speeded up, through fullest coordination and concentration of local, State, and Federal efforts and facilities.

Planning for resource development on a broad area scale inevitably involves improved conservation planning techniques, as well as improved methods of evaluation that take into account the interaction between natural resources—fully developed—and the economy of the project area. We are fortunate in having many improved technologies and new authorizations available for this task. Thus a county-by-county inventory of soil and water conservation needs now has become an invaluable aid in resource planning throughout the country.

The Soil Conservation Service has shaped its planning procedures and its other operations to give technical assistance, in cooperation with other Federal, State, and local agencies and with private interests concerned, for economic development of soil, water, and allied resources for both agricultural and nonagricultural purposes. Orderly development of land and water resources and their highest use by people calls for careful, soundly based conservation planning, whether it be for a farm, a watershed, a county, a State, or a major river basin.

Mayor Rochester (l.) and Soil Scientist Huger S. Byrd study copy of Oconee County soil survey report.

Soil Scientist to Mayor

When Mayor S. Bruce Rochester of Walhalla, S. C., answers inquiries about Oconee County with information from the recently published county soil survey report he knows what he is talking about. He helped make the survey!

That was when he was still a soil scientist with the Soil Conservation Service and before he turned businessman and community leader at the county seat city over which he presides. His change in occupations has not lessened his interest, however, in soil surveys and other aspects of the soil and water conservation program carried on in the Oconee Soil Conservation District and the district-sponsored Coneross Creek small-watershed project.

Mayor Rochester had this to say:

"It is a foregone conclusion that this publication will be of invaluable use by farmers, agricultural workers, teachers, planning boards, chambers of commerce, business people, schools, and engineers, as well as by agencies of local and higher governments. I personally find it a very good daily reference book of useful information on varied subjects. In my job as Mayor of Walhalla, I am called upon to answer many inquiries from people outside the county and State who are interested in coming to Oconee County to live. Much of the information they request is contained in this publication."

Conservation—Not More Land—Fills Coloradan's Income Needs

By Lynn R. Healey

COLORADO Farmer W. D. Anderson's experience suggests that buying more land may not be the answer to increasing farm income. Instead, he thinks it will pay the average Colorado farmer to see first what he can do with a soil and water conservation plan on his land.

Anderson, who farms 640 acres near Collbran in the Plateau Valley Soil Conservation District with the help of his sons, Leo and Howard, has seen the net income from his own place go up and up. It now supports the elder Andersons, Leo, and the Howard Anderson family of four. He credits sound conservation treatment and management of his land with this achievement.

For example, leveling the row-irrigated cropland has led to uniformly higher and more certain yields. Irrigating the permanent pasture and hayland permits the Andersons to sell some of their feed, rather than buying feed for their sheep and cattle. Clearing 111 acres once covered with brush has increased grazing. They have installed nearly half a mile of tile drain for better use of 30 acres that stayed seepy much of the time. Improving the irrigation system also has saved on water and lightened their work.

Much of the Andersons' conservation work has been done with cost-sharing under the Agricultural Conservation Program. It has helped them make a sounder, more stable unit economically. They have been cooperating with the Plateau Valley district for 13 years.

Some of the soils on the Anderson place have not been easy to irrigate. Most, as shown by the soil survey information provided by the Soil Conservation Service, are heavy textured. They take water slowly. When they dry, they tend to crack; and with flowing water, the soil may wash. By adding manure and crop residue, and not letting the soil dry too often, the Andersons have overcome this problem to some extent. The improving texture of the soil now permits water to enter it more rapidly.

W. D. Anderson and son, Leo, with registered Hereford bulls.

Anderson says that for every dollar he has spent carrying out his soil conservation plan, there has been good return. Not only has conservation helped from a production standpoint but the value of the farm has been increased.

How much land would he need to support himself and the others under the older system of farming? At least twice the land he uses now, he says. And, even then, there would be much more work and almost certainly less dependable net income.

Anderson cattle thrive in well-managed irrigated pasture of mainly orchardgrass and red clover.

The author is work unit conservationist, Soil Conservation Service, Collbran, Colo.

Conservation Planning Brings Community Cash—Better Living

By Gordon Gibson and C. R. Patton

SOME 35 farm families in the long valley between Newman Ridge and Powell Mountain in east Tennessee's Hancock County are reaping cash and better living through conservation development of their picturesque Appalachian mountain country's natural resources.

In 1961, Robert Haston, county agent, and Elmer Turner, principal of Vardy Elementary School, helped the valley residents organize the Vardy Community Improvement Club. The next year President Willie Groshe of the new club asked the Hancock County Soil Conservation District for technical help in soil and water conservation.

Gordon Gibson of the Soil Conservation Service explained to the club how soils maps could be prepared for each farm and how each farmer might be helped in planning the use of his land best suited to the soil. The club decided to promote conservation farm plans in the county in cooperation with the soil conservation district. Fourteen farmers now have such plans, and others have applied for technical help.

The farmers were quick to adopt conservation practices to improve their property. They put in tile drainage, planted trees, improved their pastures, and planned forest fire control. Thirteen district cooperators are installing tile drains in the fertile and level, but poorly drained, creek bottoms. They will be able to use this rich land more intensively and thereby reduce hazardous row cropping and costly soil erosion on the steep hillsides along the narrow valley.

Vardy community nestles between Newman Ridge and Powell Mountain in east Tennessee's Great Valley.

Harold Williams figures on 2,500 pounds of burley tobacco grown after vetch-and-oats cover crop on 1.2-acre allotment.

The authors are, respectively, work unit conservationist, Sneedville, and area conservationist, Johnson City, both of the Soil Conservation Service, Tennessee.

The community improvement club also has helped to provide organized fire protection for woodlands, which make up 70 percent of the land in the community. Until recently, the area was burned over every 3 or 4 years. Of a total of 184 acres of tree planting planned, 30 acres have been set out. District conservation plans call for woodland improvement on 785 acres.

A milk route organized by the club brings in a cash income for many of the farmers in the valley. Improvements are being made to the school lunchroom, with labor donated. The valley road is being widened and stone-paved. Improved livestock and crop varieties are being adopted, along with better management practices.

By pooling their efforts, these people are making better use of their soil, water, crops, livestock, and woodland. They are pulling together the services of such helpful agencies and private interests as the Extension Service, the Soil Conservation Service, and the Agricultural Conservation Program; school and road officials, and business concerns.

Their "operation bootstrap" has brought them a new sense of purpose and security evident up and down the valley. Perhaps the best testimonial of all to the success of their resource conservation efforts is the fact that the young folks, who formerly were forced to search for work in other places, now are finding opportunities for prosperous and satisfying lives in their own community.

Colonial Town Uses Soil Survey In Planning for Today's Growth

By Bernhard A. Roth

WHAT does a skilled consultant think of the usefulness of a soil survey in community planing? The question has been answered favorably and emphatically by Mrs. Charles R. Thomas, member of a firm that has just prepared a master plan for the fast-growing seacoast town of Hanover, Massachusetts.

The Town of Hanover, approximately 20 miles southeast of Boston, was one of the first to be settled in the country. Use of the land has undergone several transitional periods since the town was settled in colonial times. The most recent transition has led the town to become increasingly residential.

A growing population needs new housing, new commercial enterprises, new industry, new roads, and new schools. Land use and water problems are always present and become intensified with the rapid urban expansion.

Working closely with Soil Conservation Service soil scientists, Mrs. Thomas learned the complexities of their mapping techniques, and referred to their findings while helping Hanover to blueprint its future.

Chairman Philip C. Beal (l.) of Hanover Industrial Development Board and SCS Soil Scientist Charles W. Upham, in front of 100-year-old town hall, discuss soils information for new town plan.

"We've relied heavily on precise soils information whenever we could get it in planning other towns," Mrs. Thomas said. "At Hanover, we found it tailored exactly to our needs."

As a result of her experience, the Massachusetts consultant has written a guide to use of soils interpretation for community planning. Mrs. Thomas said accurate soil maps removed much of the "educated, intuitive guessing" from her type of work, and that the onsite survey lent authority to decisions affecting properties involved in land-use regulation.

The Hanover plan and Mrs. Thomas' soil science evaluation have been published for wide distribution by the Massachusetts Department of Commerce Planning Division. The two documents will

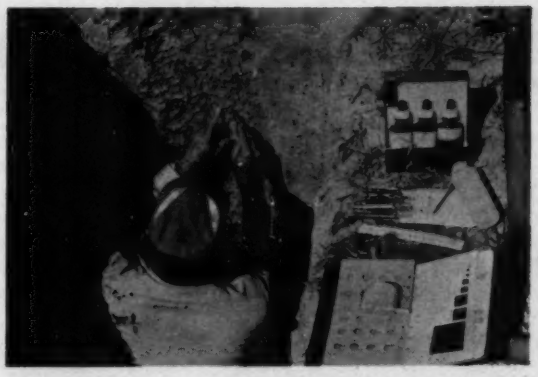
The author is field information specialist, Soil Conservation Service, Upper Darby, Pa.

HOW A SOIL SURVEY IS MADE

A SOIL SCIENTIST'S MAJOR TOOL OF TRADE IS THE SOIL AUGER. HE HAS DIFFERENT KINDS OF AUGERS. SOMETIMES HE USES A SPADE.

HE USES AN ADJUSTABLE HAND LEVEL TO MEASURE THE SLOPES.

THE SOILS INFORMATION IS MAPPED IN THE FIELD ON AERIAL PHOTOGRAPHS. THE KIND OF SOIL USUALLY CHANGES SEVERAL TIMES IN THE DISTANCE OF A QUARTER MILE.



PERIODICALLY THE SOIL SCIENTIST MUST EXAMINE THE SOIL IN DETAIL IN DEEP PITS AND RECORD HIS FINDINGS.

FIELD MAPPING IS BACKED UP BY STATE AND FEDERAL LABORATORY INVESTIGATIONS AND RESEARCH. HERE THE KIND OF CLAY IS BEING DETERMINED BY X-RAY.

INFORMATION FROM THE SOIL SCIENTIST'S FIELD SHEET IS TRANSFERRED TO A SOIL MAP TO BE PUBLISHED WHEN THE COUNTY IS COMPLETELY MAPPED.

Mrs. Thomas explains master plan locations on Town of Hanover map.

serve as case studies for hundreds of other Bay State communities grappling with the problems of rapid expansion. Offered as models are nine color-rendered maps delineating soil areas in relation to sewage effluent disposal; homesites; athletic fields; wetlands for wild waterfowl; sources of sand and gravel; roads; woodland; surface runoff; and agriculture.

Success of the Hanover project has spurred requests for additional soil survey assistance in towns throughout the 15 soil conservation districts which blanket Massachusetts from Cape Cod to the Berkshire Hills. In response, the SCS has agreed to supply soil survey information on a cost-share basis to the community. Cooperative agreements have been signed with 39 towns embracing 640,000 acres. Fifteen other towns are considering similar action.

Kinds of maps furnished vary from general soil groupings for overall planning to detailed maps outlining smaller parcels, for use by subdividers and municipal developers. Since interest began to quicken, the SCS has continually added refinements to soil maps prepared for community interests.

As an example, symbols recently have been added to make understanding of the soil maps easier for urban planners coping with soil areas having severe or very severe limitations for use. The revised symbols indicate the precise nature of limiting factors such as shallow depth to bedrock, high water table, or very stony condition. This information tells the consultant, town officials, or developers the specific difficulty that needs to be overcome or planned around.

In concluding her evaluation report, Mrs. Thomas said:

"If planning boards had made use of such information in the past, they would have more clearly complied with their purposes in regard to health and general welfare and could have avoided many costly errors. In the case of Hanover, serious errors could have been avoided."

Growing number of towns referring to soil survey information in planning is discussed in Boston office of Massachusetts Department of Commerce by Director of Planning Normand O. Pothier (center) and aids, Geographer Peter F. Emens (l.) and Engineer Frederick A. Fallon.

◆

"When farm and city people have a chance to get together, they learn more about each other. They gather facts instead of rumors—develop friendship instead of misunderstanding." — Dr. Philip J. Leyendecker, dean and director of agriculture and home economics, New Mexico State University.

"Hi Neighbor!" Company's Key to Conservation Recreation—Jobs

By Chester Bellard

The welcome.

"WELCOME Neighbor!" reads the sign as you drive up to the T. L. Jones Company lake and recreation area in the Flatwoods community of Louisiana's Rapides Parish. The sign means what it says.

The lake and recreation area nestles in one of the valleys and attracts a crowd on weekends or during off-duty hours.

Six years ago, when the company leased some 90,000 acres of cutover land, a crash program for getting it planted to trees was set in motion. Seed was sown by aircraft, seedlings were planted with machinery or by hand, and in one way or another the job got done. Local people from nearby have played a big part in establishment of the forest program.

The company hired local people, many of whom still are employed by the company. But, regardless of whom they work for, the company's nearby neighbors who formerly didn't have convenient recreational facilities, are welcome.

Shortly after the company developed a conservation plan on its land in cooperation with the Calcasieu Soil Conservation District, Soil Conservation Service technicians through the district helped it locate and design the 54-acre lake. The company built it with its own construction machinery, during slack seasons.

Free swimming, boating, fishing, and picnicking continue through the season. The company maintains the access roads, has stocked and fertilized the lake and provided habitat for wildlife, and has built picnicking facilities.

The company has applied the woodland conservation job to what was once devastated cutover, barren-looking land. Pine trees of various ages now grow on the rolling Coastal Plains hills. Where timber was already growing, it has been thinned to proper spacing; and in the mixed stands the scrub hardwoods and shrubs have been deadened to release pine. Firelanes weave protection into the pattern in all directions. Signs reading "Hi Neighbor!" along the roads through the area give planting dates and other information about the fields behind them.

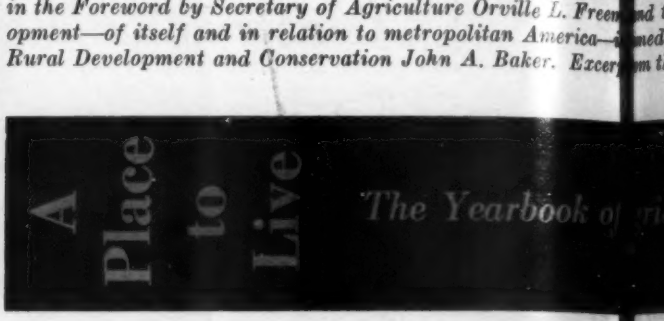
Community development has paid off in many ways. Everyone likes to be the company's neighbor, and is ready and willing to lend a hand in case it is needed. For example, fires just don't "break out" any more—and if they did they wouldn't get very far, because the company and its neighbors are interested in each other's welfare.

The lake.

The author is work unit conservationist, Soil Conservation Service, Alexandria, La.

Conservation of soil and water and related resources is hig... Stefferud and 92 authoritative writers in the 1963 Yearbook o... is satisfying for people both in rural and urban communities... in the Foreword by Secretary of Agriculture Orville L. Free... opment—of itself and in relation to metropolitan America—... Rural Development and Conservation John A. Baker. Excer...

Secretary Orville L. Freeman.



FOREWORD:—This is a time and this is a book that call for discussion, cooperation, and vision to channel great forces of change in directions that ensure that America will always be a good place to live.

The signs of change are everywhere. We see them in the growth or decline of communities, the building of highways and other facilities, the moving of people to new homes and jobs, the renewal of cities and the growth of suburbs, the enlargement of some farms and the disappearance of others, questions about the place of family farms as a dynamic force in agricultural production, shifts in the uses of land, and changes in our human relationships, institutions, and aspirations in rural and urban America alike.

But the meaning and the relentless force of the changes and their diversity become fully clear only if we fit them into a broad perspective. Just as we need a map of all major highways, not only the roads in our own county, when we start a long trip.

A perspective, such as this book aims to give, discloses that a new economic order is taking shape on American farms, in rural America, and in cities. It is a product of a technological-scientific revolution, which began 200 years ago and has speeded up tremendously in the past few years.

Its effect on agricultural production has been almost beyond belief. Its effect on farmers and communities that could not keep up with its fast pace has been sorrowful. It has made agriculture miraculously successful, but it is a warning signal if the changes, like an automobile out of control, are so fast, so undirected, or so unmindful of traffic signs and lights as to jeopardize the well-being of people . . .

Nationally a new situation has arisen, compounded of changing and growing needs for more land for industry and more water for everybody; for more and better community services; for a reevaluation of the uses of land; and for plans for the wise, enduring use of land, water, forests, open spaces, air, rivers, and seashores. . . .

We have an opportunity to bring closer together all parts of our population, our economy, and our geography and so to help us realize that the prosperity of city people is tied closely to the well-being of rural people, that many traditional distinctions between city and country no longer are true, and that the United States is one Nation, indivisible. . . .

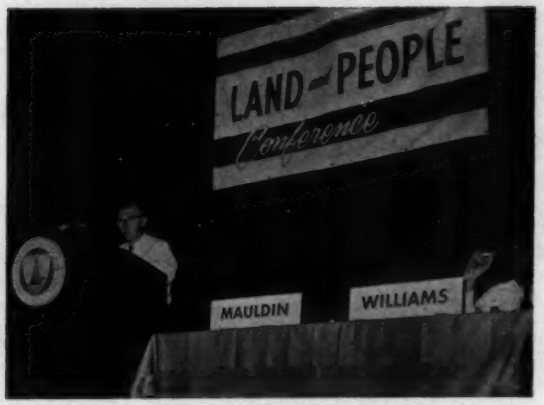
Of all our resources, the most valuable are people. Changes in rural America left many rural people disadvantaged. Less than a third of our population now is rural, but more than half of the 8 million American families whose yearly incomes are below 2,500 dollars live in rural areas. More than one-fifth of the 22 million youths who live in rural America are members of poor families. Many of our people are unemployed. Many are underemployed. Many need training for new work. Many need help.

To help people, the Department of Agriculture, which has a glorious history of service to all Americans, has embarked on Rural Areas Development programs. Their aims are to revitalize and recapitalize town and country, to improve or redevelop physical resources, to put the resources to work for all America, and to provide new or improve public facilities and new economic opportunities.

They will have a great and good effect on our family farms, which as productive units have met the test of time but which have been threatened by forces outside of farming. . . .

We have also the opportunity to assess the function of government in the work before us. I, myself, believe the Federal Government must take a leading part in rural economic development because of its wide scope. But the work also requires investment capital and the help of commerce and industry. It will require the resources of State and local government, but it can succeed only with the initiative and leadership of local people.

...ces is hi...ng technological advancements presented by Editor Alfred ...arbook o...iculture as helping to make America "A Place to Live" that ...mmunitie... theme for the 79 chapters in the 608-page book is projected ...e L. Freem...d the significance of today's expanding rural areas devel-...merica—...ned up in the concluding article by Assistant Secretary for ...r. Excer...m their presentations appear below:



Ass't Secretary John A. Baker.

WHEN PEOPLE MEET, DISCUSS, AND ACT:— Success in rural areas development is keyed to the ability of local people to set their goals in the light of their needs and their realizable potentialities.

Every possible source of technical assistance and service should be considered, and all that can be useful should be drawn on. Usually, no single agency, Federal or State, and no single private enterprise, commercial or cooperative, can supply all of the aids needed to work out the complicated problems of any area. . . .

Land, water, timber, and human resources must be put to work systematically for rural America to move all of America ahead more rapidly. . . .

Programs in the Department of Agriculture include 37 services that offer help in rural development. They are of four types:

Those that contribute to the improvement and stabilization of farm income;

Those that provide technical services and financial resources for the balanced use, development, and conservation of soil, water, forests, and other natural resources;

Those that encourage and facilitate the establishment and expansion of economic enterprises, including family farms, industrial and commercial firms, recreational facilities, and farmers' cooperatives, and

Those that provide leadership, technical services, results of research, and financial resources to stimulate area planning, organization, and action in communities. . . .

Each contributes also to other broad national goals.

(Thus): The Cooperative Federal-State Extension Services provide assistance in organizing and operating rural areas development planning committees and similar local bodies through education for action and organizational leadership for local and State planning activities as well as other specialized technical services.

The Soil Conservation Service administers the program of technical services to members of soil and water conservation districts established under State laws, soil and snow surveys, watershed protection and flood prevention projects programs, the Great Plains conservation program, and a program of special resource conservation and development projects. . . .

Supporting scientific research for rural areas development activities is conducted by the Agricultural Research Service; Economic Research Service; State agricultural experiment stations, supervised by the Cooperative State Experiment Station Service; the Forest Service; the Agricultural Marketing Service; and the Farmer Cooperative Service.

Farm commodity price support and related programs are administered by the Agricultural Stabilization and Conservation Service. The Federal Crop Insurance Corporation and the production emergency loans of Farmers Home Administration also have leading roles on this stage. . . .

Metropolitan America cannot exist without rural America, but, busy with its own growing pains, metropolitan America does not quite understand rural America and tends to overlook it. Meanwhile, rural America, caught up in wrenching global changes neither of its own making nor to its own liking, has some justification for feeling neglected, put upon, and frustrated.

Yet, as the Nation grows it must recapture and improve the sense of unity of simpler times. It must provide a broad opportunity for people in rural America to attain deeply felt aspirations on a parity with urban America. To reach this goal requires higher real incomes and faster economic growth in rural America. Rural Americans need and deserve a higher grade of economic opportunity, more income, more purchasing power, better living.

"A Place to Live" may be bought at $3.00 from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402. It is not available from U. S. Department of Agriculture offices.

Community Watershed Dam

Helps Cut Fire Insurance

By R. M. Dailey

PROPERTY owners around Walnut Cove in North Carolina are paying less for their fire insurance because of a new fire truck that two water-ski shows on a community small-watershed flood prevention reservoir helped the Volunteer Fire Department to buy for its rural fire-fighting unit.

The first of 13 reservoirs planned for the $2-million Town Fork Creek watershed project, the dam started in September 1961, 5 miles north of town, was not even completed when the fire department promoted its first water-ski show. More than 2,000 people attended this and the later event, paying $1 admission for adults, with children free.

More than 2,000 people saw two shows.

Fire department volunteers are proud of their new truck.

The two shows netted $1,100 in admission fees and profits from a concession stand operated by the department's auxiliary. The money assured the new truck; and since it was bought, fire insurance rates have dropped an average of 20 percent on rural property within a 3-mile radius of the fire station. This area includes 16,000 acres in the watershed.

The improved fire department and the watershed project "grew up" together. In 1956, the community found its volunteer fire department inadequate for modern times. There was only one hose-carrying truck and no headquarters building. Reorganization called for the division of the 37 members into town and rural units, and for a new $10,500 pumper truck with tank, a tank truck from army surplus, and a $12,000 building.

About the same time, farmers and townspeople applied for a watershed protection and flood prevention project for the watershed. Walnut Cove is just out of the flood plain near the lower end of the 84,521-acre watershed, which lies in southern Stokes and northern Forsyth counties, not far from Winston-Salem. The project was approved by the Soil Conservation Service for planning in 1958, and by Congress for operations in 1960.

Its sponsors, the Stokes County and Tri-Creek soil conservation districts and the Stokes County Board of Commissioners, as well as the Town Fork Creek Watershed Association, were glad to have public attention called to the first reservoir and to the recreation pos-

The author is former State conservationist, Raleigh, N. C., and now assistant deputy administrator for watersheds, Washington, D. C., Soil Conservation Service.

sibilities on watershed reservoirs. Fred D. Cooke of Rural Hall, one of the seven owners who granted the fire department free use of the 38-acre reservoir for the water-ski shows, already had improved his lakeside area for recreation with a boat dock, swimming beach, and picnic area.

"We kept our family together this summer and enjoyed resort facilities here at home because of the lake," Cooke reported last fall. "Our teenagers say it is the best summer we have spent."

In addition to their many recreation opportunities, the 13 reservoirs are estimated to provide annual benefits of $144,000 on the 3,834-acre flood plain. Benefits are counted upon to total a million dollars or more on other lands.

"This is what the Department of Agriculture calls 'Rural Areas Development' at its best," said William F. Marshall of Walnut Cove, chairman of the watershed association. "Rural communities such as ours work on many fronts to build prosperity. But always the local people must be in charge —and working. The joining of two such widely divergent interests as fire protection and flood prevention emphasizes that rural areas development is a many-sided affair. The attainment of a principal goal for one group provided incidental benefits to the other."

FIRST CONSERVATION DISTRICT FARM PLAN MARKER

TRAVELERS going through Seneca, South Carolina, may pass a historical roadside plaque marking the site of the first soil conservation farm plan developed in the United States. It stands in front of the home of Mrs. Ploma M. Adams, for whose original 330-acre farm—more than half of which today is within the city limits—the first plan was made, in 1938.

Municipal, County, State, and Federal officials, agricultural representatives, and civic leaders took part in the marker's 1963 dedication. It was sponsored by the Anderson, Oconee, and Pickens soil conservation districts which made up the original Upper Savannah district in which Mrs. Adams was the first cooperator.

Mrs. Adams long has been a crusader for improvement of farms and homes in Oconee County. As organizer of the Seneca Literary and Civic Club in 1922, for example, she urged the club to plant trees in town, and she set out a large number of pines on her farm, later using some of her timber to build houses. She was "looking around" to get help in further improving her farm when she learned that the soil conservation district had been formed—one of the first 13 districts organized in the country, in 1937—and that technical help would be provided to landowners by the Soil Conservation Service. SCS representatives recalled that upon completion of the plan, "she went right to work, planted trees and grasses, built terraces, and did whatever was recommended."

The State Highway Department will maintain the marker, in the erection of which the South Carolina Department of Archives also cooperated.

Mrs. Adams (r.) and nieces Brenda Lowry (l.) and Mary Martin show off roadside marker at dedication.

SCWD Supervisor W. Hugh McGee tells 25th anniversary audience how as SCS technician he helped Mrs. Ploma Adams (r.) prepare Nation's 1st conservation farm plan shown behind them, as Dr. J. B. Douthit, Clemson, the country's longest-serving district supervisor, and SCS Area Conservationist B. M. Latham (l.) listen.

Cropland Conversion Is Boon To These Hunters and Fishermen

By Hugh Tidwell

Browntopmillet-and-corn wildlife planting, with new irrigation supply ditch in background, on farm of George B. Franklin, Jr. (l.).

THE farm of George B. Franklin, Jr., at Rayville, Louisiana, is being converted to a converging point for fishermen and hunters as a pilot project in the Cropland Conversion Program. The farm, consisting of 18,000 acres of woodland, cropland, and grassland, is near heavily traveled U. S. Highway 80.

Franklin's farm plan, developed with help of the Boeuf River Soil Conservation District, calls for converting cropland to income-producing recreation areas. The Soil Conservation Service, to which the application to participate in the CCP was referred by the Agricultural Stabilization and Conservation Service, has helped in planning large acreages of corn and browntopmillet, in scattered areas, as feed for ducks, quail, doves, and other wildlife. In addition, there will be many acres of crop residues from the corn, soybeans, and oats that are planted on portions of the 7,000 acres of cultivatable land on the farm.

With engineering assistance from SCS, a 200-acre lake is being divided into a greentree reservoir and two fishing areas. Ducks can feed on pin oak acorns in the shallow water of the reservoir, and water in the fishing areas ranges from 3 to 16 feet deep. There are 3 miles of levees around the lake. A 16-inch well will pump about 3,000 gallons of water a minute at flooding time.

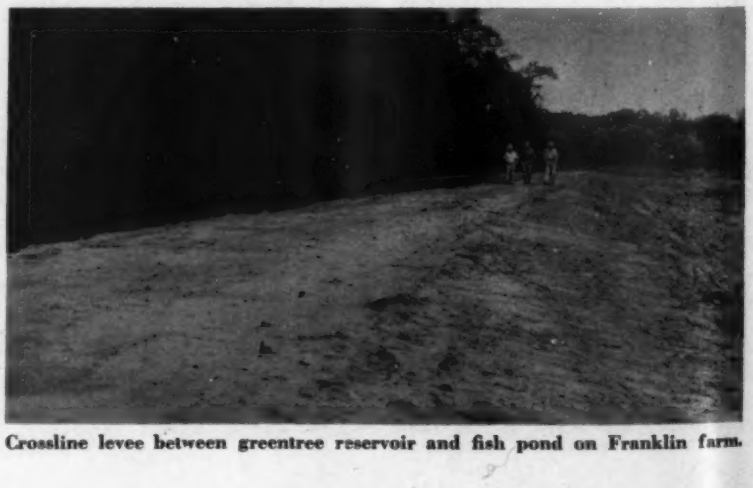
"After duck season, we can drain the areas with our system of valves and controls," Franklin explained. "We can take water out of one of the lakes and fill the reservoir, also."

An elevated ditch serves these areas individually, and each of the lakes can be drained separately. The only water going into the lakes will be what rains directly into them or what is pumped into them.

Looking toward future expansion, Franklin has stocked 27 registered quarter horses, as a part of the recreational project. Wild boar have been purchased and will be available for hunting.

"Wild boar hunting is now recognized as one of the most dangerous and most fascinating sports," Franklin said.

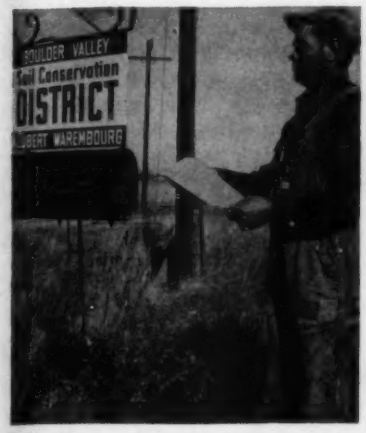
The Franklin Cropland Conversion and Conservation Project lies in both the Boeuf River and the Northeast soil conservation districts in Richland Parish. Leasing arrangements with individuals will produce income from the recreational activities.



Crossline levee between greentree reservoir and fish pond on Franklin farm.

The author is work unit conservationist, Soil Conservation Service, Rayville, La.

Klubert Warembourg



WATER-SAVING and management measures have had an especially important role in the conservation plan by which Chairman Klubert Warembourg of the Boulder Valley Soil Conservation District successfully operates his 132-acre Colorado farm just west of Louisville. His conservation farming success, in turn, underscores his climb up the traditional agricultural ladder of success from farm laborer to tenant to owner.

Warembourg was born in 1921 on a 50-acre irrigated farm south of Louisville, where his parents settled in the early 1880's when they came from Alsace Lorraine. His father worked in the coal mines to supplement his farm income, and young Warembourg grew to manhood working on his father's and neighboring farms.

Warembourg learned the value of conservation farming when, after serving in the Armed Forces during World War II, he and his brother, Walter, pooled their resources for a down payment on a 240-acre place south of Louisville and immediately asked for help from the Boulder Valley district. Their conservation plan is No. 21 on the district roll.

After his marriage to Helen Sekulich of the Louisville community, Warembourg and his wife rented the 132-acre place west of Louisville and went into dairy farming. After a few years he was able to buy this farm on a purchase contract.

Again with the help of the soil conservation district, and of the Soil Conservation Service men assigned to the district, Warembourg developed a complete conservation farm plan. It called for reorganizing the irrigation system, leveling the land, developing an irrigation well from an abandoned mine shaft, building two farm ponds, planting a windbreak, and using a conservation cropping system.

Warembourg's upper reservoir.

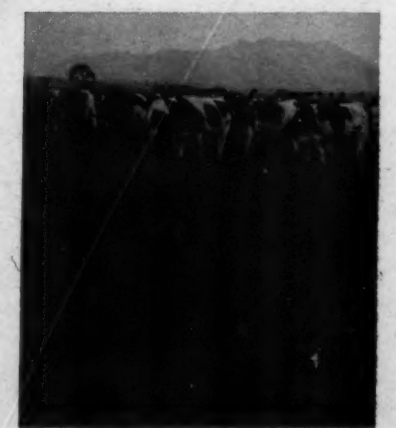
The first year, he was able to level 16 acres for irrigated pasture and build one of the farm ponds. But, even with his Agricultural Conservation Program cost-share payments and doing as much of the conservation work as possible with his own machinery, he saw that to complete his conservation plan and make the farm really productive he would need long-time financing.

He arranged for a Farmers Home Administration farm ownership loan. Later, Great Plains Conservation Program cost-sharing helped him complete the practices called for in his conservation plan.

Among the conservation results Warembourg likes are his yields of 5 tons of alfalfa an acre, compared to only 3 tons before, and the way his 16 acres of irrigated pasture, fertilized as needed, supplies his dairy herd most of the summer.

Vice-president of the Goodhue Ditch Company, Warembourg also finds time to help his children, Christy and Jeff in their 4-H Club projects, and is assistant leader of the local 4-H Club. Students and teachers from time to time visit his farm to see the conservation work he has done.

—RALPH SHIPP



Dairy herd on his improved pasture.

Orchardist Brothers Combine Conservation-Marketing Tricks

By Garland J. Kidd

THREE Virginia brothers have combined soil and water conservation with modern marketing to boost profits on their historic Champlain Orchard farm in Madison County. Part of a 1,000-acre orchard setup, Robert, Elvin, and Matt Graves' farm is in the foothills of the Blue Ridge Mountains a few hundred miles from big city markets.

Graves brothers contour orchard with Elvin Graves' home at left.

Old Rag Mountain forms background for this part of Champlain Orchard.

Growing good fruit is one thing, but getting it to market in time is equally important. The Graves brothers started gearing up to modern, fast-moving marketing needs a few years ago. Today, their fruit is picked in the morning, graded, packed, and loaded on trailer trucks in one continuous process, all managed by the Graves. The next morning the fresh fruit is on sale at supermarkets in Baltimore, Washington, and Richmond. A 100,000-bushel cold storage house provides ample holding space for apples to be sold on the off-season winter markets.

Backing up this fast-moving marketing operation, the Graves employ several conservation tricks to assure the best possible fruit. As cooperators with the Culpeper Soil Conservation District, they follow a long-range conservation farm plan worked out with the help of Soil Conservation Service technicians.

Older orchard plantings had been laid out in straight rows on steep hillsides. The friable mountain colluvial soils were very fertile, but slopes made the land unhandy for operating modern spray equipment. The Graves solved this problem by laying permanent pipelines through the orchard with a pump at the base of the slope. The conservation plan licks this problem in new orchards by having the trees planted in contour rows

The author is work unit conservationist, Soil Conservation Service Madison, Va.

around the hills.

"This holds moisture for better tree growth, cuts erosion, and makes spraying, maintenance, and harvesting work easier and faster than the old up-and-downhill method," Elvin Graves reports.

In 1948, the Graves brothers planted 100 acres of apple trees 35 feet apart, on a sloping field, with peach trees set out between the apple trees to produce an added crop while the apple trees were making necessary growth for production. After 12 years of production, the peach trees are now being removed, making room for an apple orchard hitting its prime of fruitfulness.

For the first 3 years after planting trees, clover and rye are grown each year and disked back into the soil. This cultivation stimulates tree growth and adds mulch to the soil, reducing erosion and water runoff.

After the trees get a good start, the entire orchard is seeded to grasses and legumes. The soil and water conserving cover is clipped three to four times a year and left on the ground, providing an additional mulch. The Graves built a series of three irrigation ponds in the orchard to conserve the flow of water from a spring. Even though average annual rainfall in Virginia is 45 inches, dry spells can occur during the critical growth of fruit, making irrigation profitable.

"Irrigation paid enough the first year in use to pay off the entire outlay for equipment," Elvin Graves said. "Irrigation during dry periods not only increases the size of the fruit, but often advances the quality one grade."

The ponds, stocked with largemouth bass and bluegills, offer an extra recreational bonus to the Graves and visitors.

North Carolina Tobacco Growers Like Tall Fescue in Rotations

By W. W. Stevens

(L.)—Fibrous root system of 4-yr.-old fescue 24 in. long; (r.)—6 mo.-old fescue roots 10-15 in. long.

TALL fescue grass is demonstrating its effectiveness in crop improvement and soil conservation on more than 50,000 acres of North Carolina tobacco land.

Flue-cured tobacco used in the manufacture of cigarettes is grown largely in Virginia, North Carolina, South Carolina, and Georgia. Most of it is grown on well-drained sandy soils—much of it on sloping land with serious problems. Traditionally, it is clean-tilled, thus exposing the soil to erosion. In addition to the hazard of erosion, tobacco also is susceptible to a number of diseases and to damage by insects and nematodes. All create specific problems in applying soil and water conservation programs on tobacco land.

Some of the first attempts to conserve the soil consisted of contour cultivation, use of winter cover crops, terracing, and diversions. These measures were largely mechanical and proved to be of value, but they did not reduce erosion enough to be within the allowable tolerance or help to control soil-borne diseases, insects, and nematodes.

In the late thirties, a few North Carolina farmers tried growing tobacco in rotation with redtop grass. This practice was effective to some degree, but did not do a complete job. Because redtop was not too well adapted to the Coastal Plain and Piedmont sections, where much of the flue-cured tobacco is grown, it did not gain wide acceptance.

Tall fescue grass seeded in a small grain-grass-tobacco rotation.

The author is State soil conservationist, Soil Conservation Service, Raleigh, N. C.

In the early 1950's, the Soil Conservation Service encouraged a few soil conservation district farmers to try tall fescue grass (Ky 31) in their tobacco cropping system. The results of those trials were outstanding, both in the quality and quantity of tobacco produced and in the influence this grass had on disease and nematode control.

This success with tall fescue brought a tremendous increase in the amount of the grass grown in rotation with tobacco. Today, the practice is fairly common in all counties where bright leaf tobacco is grown in appreciable quantities. The only difficulty encountered is where fescue is grown on extremely sandy soils; but it can be overcome by management that includes protection from grazing during late spring, summer, and early fall and by high rates of fertilization.

Several years ago, the North Carolina Experiment Station established crop rotation experiments at its Oxford and Rocky Mount stations to determine the value of fescue in the cropping system. The results of those experiments indicate that tobacco following 2 years of fescue is worth approximately $200 more an acre than if tobacco is grown continuously.

The increased value of the tobacco after fescue is traceable to the addition of perennial grass crop residue, reduction in nematodes, improved soil structure, and increased water-holding capacity. Some of the best tobacco produced in the State has been in a tobacco-fescue rotation.

Tall fescue grass in the cropping system also has proved to be an excellent conservation practice. The soil is protected from erosion while the perennial grass is on the land; water infiltration is increased; soil structure is improved; and damage by nematodes is reduced. The fescue residue in and on the surface of the soil during the tobacco year maintains high infiltration rates, thus reducing runoff.

Though much of the experimental work with fescue has been in a tobacco cropping system, farmers have grown other crops in rotation with fescue. The practice has been highly successful with most row crops.

District Cooperator's Home Movie Shows Neighbors How to Build Pond

By R. R. Kirby and J. W. Gilliam

PLANNING farm or community ponds has been made easier for people in the Chester County (Tenn.) Soil Conservation District since the district has had the use of E. C. Robertson's home movie showing the steps in pond construction.

A 4-acre farm pond, recently completed, was among the conservation developments Robertson planned with Soil Conservation Service technical help when he set out to prepare his 136-acre farm at Jackson for his forthcoming retirement from his service station business. A camera fan, he decided to make a motion picture record of the pond construction.

The site was in a wooded area, and Robertson sold the merchantable timber. When the first tree was felled, he was there to record the event with his movie camera.

Robertson taking home movie shot during pond construction.

Later scenes show the core trench being cut, the dam being formed and compacted, and the spillway construction. Every step was filmed as the operation progressed.

Some of Robertson's friends and coworkers in Jackson who wanted to use the pond for picnics and other recreational activities pitched in and helped with the seeding, mulching, and fertilizing of the dam and the spillway area. The Chester County district ordered bluegill and largemouth bass to stock the pond.

Robertson offered the district use of the movie in promoting its conservation program. After being previewed by the board of supervisors, it was promptly scheduled for showing to several community clubs, 4-H Clubs, and Future Farmers of America chapters. The movie also is available to earth-moving contractors and others.

The authors are, respectively, work unit conservationist, and conservation technician, Soil Conservation Service, Henderson, Tennessee.

Right Equipment Helps District Do Efficient Conservation Job

By Ben Mace

HAVING enough and the right kind of farming equipment gets the conservation jobs done efficiently for cooperators in our Amador (Calif.) Soil Conservation District.

During the first few years of district operation, beginning in 1950, however, farmers were hampered by lack of adequate equipment. Landowners, aware of the desirability of conservation practices, wanted to initiate them on their property. But application frequently was delayed, and plans even were discarded altogether; because farms and ranches were not large enough to warrant each landowner's owning the specific tools for getting certain parts of the conservation work done. He couldn't rent them and only rarely could borrow a machine designed for use for conservation rather than for general farming.

The district first bought an 8-foot grain drill through the State revolving fund on a 5-year lease-purchase agreement, with monthly charges based on use by cooperators. We then purchased a 10-foot fertilizer spreader through the same arrangement.

We were encouraged by enthusiasm of the cooperators, one of whom said of the fertilizer spreader: "This tool is actually making money for me"!

With the first two items paid for, the district was able to expand its inventory to today's 25 separate tools valued at $20,000. This has been made possible through grants from cooperators, the Soil Conservation Service, the State government, and other sources.

A small, pull-type road grader was donated by the County Board of Supervisors. Several items acquired were larger than we as directors felt were suited to district needs. They were offered to equipment companies, on a competitive bid basis, for small tools preferred in exchange, and the district was able to convert from larger to smaller tools.

Amador County SCD President Mace (l.) and Equipment Manager Bob Strickland at new equipment building.

District wheel tractor pulls rotary brush cutter through patch of chamise.

The district also was able to add an implement carrier to its inventory, to allow easy transportation of other equipment. It is a 4-wheeled affair that can be pulled behind a pickup truck.

With considerable help from the County Board of Supervisors, the SCD directors recently also were able to erect a 44 x 72-foot metal equipment building on leased land.

Now our district has an acceptable inventory and an efficient, solvent program which leaves a small margin for operational needs and equipment upkeep, and a small amount for future purchases. The variety of tools available enables cooperators to conduct conservation practices on woodland as well as crop and range land.

Current inventory includes a rotary cutter with 54-inch cutting width, a wheel tractor, tracklayer tractor with blade, front-end loader, and a 3-bottom, two-way plow. The equipment is available for all landowners who have an applicable conservation need, and the rental transaction is made simply by completing a request to the district.

Directors George Winter, Ken Deaver, and I feel we have accomplished one of the most important goals by providing a means of getting conservation on the land. In the process, we have stimulated more interest in conservation methods. With an understanding of requirements for a coordinated conservation program, we have been guided toward long-term goals, adhering to our early decision to get more conservation on the ground.

The author is president, Amador County Soil Conservation District, Jackson, Calif.

These Irrigation Farmers Restore Alkali Lands

By Norris A. Mathey

CONSERVATION measures have helped Cooperators R. D. Bechtel and George Ziegler in Arizona's Florence-Coolidge Soil Conservation District to restore alkali-contaminated lands to good irrigated fields. Landshaping and special water application, fertilizing, and cropping practices have been principally responsible.

Irrigation after leveling on R. D. Bechtel farm.

Small grain planted first year after leveling.

Bechtel, a cotton farmer, and Ziegler, a dairy and cotton farmer, farm a few miles west of Coolidge in Pinal County. Parts of both farms had become so contaminated with alkali that the land no longer could be farmed economically.

Both Bechtel and Ziegler have been district cooperators for more than 10 years, during which time both farms have had a facelifting. With technical help from the Soil Conservation Service, field layouts have been changed, some of the irrigation ditches lined with concrete, most of the fields reshaped to desired irrigation grades, and cropping systems adopted that keep the soils in a more favorable condition for irrigation farming.

The first phase in conversion of the alkali fields was to reshape, or level, the land to the desired irrigation grade. This was actually the only phase of the two farm programs that was similar, and even this was somewhat different. Bechtel leveled his salty fields flat, while Ziegler leveled his to a uniform grade—both with a view to getting maximum effectiveness from the water in leaching out the alkali.

Ziegler, being a dairy farmer, had a large quantity of barnyard manure available which he applied to the alkali fields, at about 30 tons to the acre. The manure was plowed into the topsoil and the field planted to annual forage

The author is work unit conservationist, Soil Conservation Service, Coolidge, Ariz.

crops, either barley or sudangrass, depending upon whether it was a winter or summer planting.

After planting, the field was irrigated heavily, using upwards of an acre-foot of water to the acre. The crop then was pastured until the end of its growing season, when another, larger, application of manure was made—up to 40 tons an acre on some spots. This fertilizing-cropping program was repeated until the desired low level of alkalinity was reached.

"A program of this sort takes time," Ziegler says, "but there is little out-of-pocket cost, as the value of the forage feed produced is about equal to the farming costs; and my land is getting better all the time."

Bechtel works 10 tons of agricultural gypsum to the acre into the top 4 inches of soil, and puts on a leaching irrigation. The field

George Ziegler applying a leaching irrigation to alkali land.

is treated as one large border and covered continuously with water for 3 weeks.

During this period, about 3 feet of water has been applied to the field. Alkali has been washed down and out of the topsoil, and the concentration of salts in the upper subsoils has been lessened enough to provide for a fair water-intake rate.

The field is then planted to alfalfa with a barley nurse crop. Barley is grown for its relatively shallow root system, that increases the organic-matter content of topsoils. Alfalfa is grown for its deep and heavy root system, that tends to keep the subsoils open. After the barley has been harvested, any spots in the field that failed to produce are given another application of gypsum and reseeded to alfalfa, after which the field is irrigated as necessary until a stand has been obtained.

Bechtel has found that even though his first costs are high in making a good farm out of alkali land, the results have been comparably high.

LAND AND WATER USE. Edited by Wynne Thorne. 364 pp. 1963. American Association for the Advancement of Science. Washington, D. C. $8.00 ($7.00 to AAAS members). Publication No. 73.

This useful reference book brings together 23 informative and thought-provoking papers presented at the Land and Water Use symposium of the Association held in Denver, Colo., December 27, 1961. As Dr. Thorne points out in the preface, the primary concern of the symposium was the concept of land and water as related resources, with emphasis on the critical problems of land and water in the mountain and plains region.

Numerous professional societies sponsored the symposium and sent some of their most competent thinkers and writers. For example, Roy D. Hockensmith of the Soil Conservation Service presented the results of the U. S. Department of Agriculture's Conservation Needs Inventory. This cooperative study, made with the active assistance of about 3,000 county committees of landowners and operators, and with technical backstopping, provides the most accurate estimates of current land use in our Nation's history and projects the changes in land use expected by 1975.

"Livestock Interests in Public and Private Lands of the West" is the title of an important paper by Ralph E. Hodgson, supplemented by M. L. Upchurch's "Public Grazing Lands in the Economy of the West." Hodgson, of the Agricultural Research Service, points out that the 17 Western States have 57 percent of the Nation's beef cattle and 74 percent of its sheep. Upchurch, of the Economic Research Service, calls attention to the wide variation among the Western States in their dependence on public range, and the fact that nationally the public lands provide only 10 percent of the grazing requirements of beef cattle and sheep.

N. Keith Roberts, of Utah State University's Department of Agricultural Economics, comments in "Managing Private Lands in Relation to the Changing Uses of Public Lands" on the changes livestock producers have been forced to make in their operations in the Inter-Mountain West as a result of cuts in grazing permits on the public range. He also examines the future—a future characterized by an expanding use of the public lands of the West for recreation with corresponding reductions in their use by livestock.

"Land and Water Use" is a reference volume of value not only to conservationists but to overall planners and to individual land-

GOVERNMENT PRINTING OFFICE
DIVISION OF PUBLIC DOCUMENTS
WASHINGTON, D. C. 20401

OFFICIAL BUSINESS

PENALTY FOR PRIVATE USE TO AVOID
PAYMENT OF POSTAGE, $300
(GPO)

If your address changes, please notify us of your complete new address, including zone or RFD number, and include old address with our code number as shown above.

owners in the West who will face many critical decisions on land use in the years ahead.

—J. C. DYKES

CAREERS IN CONSERVATION —OPPORTUNITIES IN NATURAL RESOURCES. Edited by Henry Clepper for the Natural Resources Council of America. 141 pp. The Ronald Press Company. New York. $3.75.

This book can be described best as an excellent guide for providing essential information for young people who are considering a professional career in conservation of natural resources. It should serve as an especially valuable tool for those guidance counselors who want authoritative information to use in assisting students who are looking for challenging opportunities on: the job requirements, employment opportunities, education needed, compensation and rewards, and colleges and universities where professional educational opportunities are available.

Separate chapters cover soil conservation, wildlife management, fisheries, forestry, range management, watershed management, parks and recreational development, and natural resources administration. They are written by specialists who are recognized as well qualified within their professions to advise on educational preparation of careers in those fields.

Gladwin Young, associate administrator of the Soil Conservation Service, is author of the chapter on soil conservation. He observes that soil conservationists and other SCS technicial specialists who work directly with farmers and ranchers, leaders of soil conservation districts, city, county, and State officials, and civic leaders each has the satisfaction of knowing that his job is essential to the national welfare, that it is appreciated by the many individuals and organizations with which he works, and that it will have lasting value to mankind."

The other authors are: E. L. Cheatum, assistant director of the New York State Conservation Department's Fish and Game Division; Kenneth D. Carlander, professor in the Department of Zoology and Entomology at Iowa State University; Arthur B. Meyer, editor of the Journal of Forestry; L. A. Stoddart, head of the Department of Range Management at Utah State University; Robert E. Dils, professor of watershed management at Colorado State University; J. V. K. Wagar of the College of Forestry and Range Management at Colorado Springs University; and Roger D. Hale, past vice-president of the Conservation Foundation and past chairman of the Natural Resources Council of America, which sponsored "Careers in Conservation."

The Council is a nonprofit, nonpolitical organization of 36 national and regional associates dedicated to the wise use of our renewable natural resources. E. H. Graham of the SCS and Daniel A. Poole, wildlife biologist and editor for the Wildlife Management Institute, served on the editorial committee in preparation of this book. It should serve to answer many of the questions prospective conservationists have about preparing themselves through proper professional education for a career in this field.

—E. J. PETERSON

Have You Seen?...

• "One Step At a Time" by Kent Alverson of the Soil Conservation Service, USDA PA-501. In eight steps, one step at a time, this bulletin tells what should be done in applying soil and water conservation on the land. (Supersedes PA-69, "First Things First.")